Environmental Resources Management

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8 January 2014

Mr. Roger Papler
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Third Addendum to Work Plan to
Evaluate Potential Vapor Intrusion
Intersil/Siemens Site, Indoor Air Study Area
Cupertino, California
Site Cleanup Requirements Order No. 90-119

Dear Mr. Papler:

On behalf of SMI Holding LLC (SMI), ERM-West, Inc. (ERM) has prepared this *Third Addendum to Work Plan to Evaluate Potential Vapor Intrusion* (Third Addendum) for the Intersil/Siemens Superfund Site in Cupertino, California (the site, Figure 1). This Third Addendum was prepared at the request of the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), and the United States Environmental Protection Agency (USEPA). This Third Addendum includes a scope of work to perform additional activities related to the vapor intrusion evaluation for the Indoor Air Study Area, pursuant to a letter from the RWQCB to General Electric Company (GE) and SMI dated 11 December 2013.[1]

The 11 December 2013 letter requires GE and SMI to address the following items:

- Cold weather residential indoor air sampling during the months of January and February 2014;
- Commercial indoor air sampling with the heating, ventilation, and air conditioning (HVAC) system turned off in the on-property building at the former Siemens facility;

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[1] RWQCB, San Francisco Bay Region. 2013. *Requirement for Vapor Intrusion Evaluation Workplan for 10900 and 10950 North Tantau Avenue, Cupertino, Santa Clara County.* 11 December.

- Vapor intrusion evaluation in residential and commercial buildings where groundwater-trichloroethene (TCE) levels exceed 5 micrograms per liter (µg/L); and
- Comparison of indoor air sampling results to the TCE short-term removal action levels and USEPA's updated long-term TCE screening levels.

This Third Addendum addresses the second bullet (commercial sampling with HVAC system off at former Siemens facility) and fourth bullet, as appropriate. AMEC Environment & Infrastructure, Inc. (AMEC) is preparing a work plan concurrently that addresses the first, third, and fourth bullets in the RWQCBs 11 December 2013 letter with respect to the off-site residential study area.

The Current land owner or its tenant, Kaiser Permanente, have not yet agreed to the proposed sampling presented in this Third Addendum. SMI understands that Kaiser Permanente operates the building at the former Siemens facility 7 days per week from 8 a.m. to 8 p.m., and that the procedures described in this Third Addendum may not be acceptable. Discussions with the landowner are ongoing, and modifications to the proposed approach will be communicated to the RWQCB and USEPA.

This Third Addendum is supplemental to the *Work Plan to Evaluate Potential Vapor Intrusion* (2012 Work Plan) submitted by AMEC on behalf of GE and SMI in February 2012 (AMEC, 2012a[2]). In addition, this Third Addendum is consistent with the *Revised Addendum to Work Plan to Evaluate Potential Vapor Intrusion* submitted by AMEC on behalf of GE and SMI in August 2012 (AMEC, 2012b[3]).

Specific information from the 2012 Work Plan that is relevant to this investigation, but does not change, is not repeated herein. The 2012 Work Plan sections that are not repeated in part or entirely are:

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[2] AMEC. 2012a. Work *Plan to Evaluate Potential Vapor Intrusion, Intersil/Siemens Site, Indoor Air Study Area, Cupertino, California.* 12 February.

[3] AMEC. 2012b. Revised *Addendum to Work Plan to Evaluate Potential Vapor Intrusion, Former AMI Building 700/800, Cupertino, California.* 20 August.

- Section 1.0 – Introduction; changes to the project organization and project personnel from the 2012 Work Plan are discussed in this Third Addendum.
- Section 3.0—Field Sampling Plan; changes from the 2012 Work Plan are discussed in the Revised Addendum. Where there is no variation from the 2012 Work Plan, details are not repeated in this Third Addendum.
- Section 4.0—Data Evaluation and Reporting.
- Section 5.0—General Mitigation Approach; conceptually the overall mitigation approach does not change. Implementation at a large commercial/industrial building will differ from a residence.
- Appendix A—Quality Assurance Project Plan (QAPP).

Therefore, this Third Addendum addresses changes to Section 2 of the 2012 Work Plan (Overall Approach), as well as portions of Sections 1 and 3, as noted above.

INTRODUCTION

The roles and responsibilities have not changed from the 2012 Work Plan; but the project personnel responsible for the implementation have changed. The project team roles include:

- RWQCB Project Manager – Mr. Roger Papler;
- USEPA Superfund Project Manager and Technical Lead – Ms. Melanie Morash;
- USEPA Quality Assurance Point of Contact – Mr. Mathew Plate;
- Program Principal-in-Charge and Technical Lead – Mr. Ben Leslie-Bole for ERM;
- Project Manager – Ms. Heather Balfour for ERM;
- Human Health Risk Assessor – Mr. Mark Jones for ERM;
- Field Team Lead – Conor McDonough for ERM;
- Quality Assurance Officer – Ms. Sandra Mulhearn for ERM; and
- Eurofins Air Toxics Inc. (Air Toxics) Laboratory Point of Contact – Ms. Kelly Buettner.

OVERALL APPROACH

This Third Addendum describes field sampling activities, evaluation and reporting of results, and a general mitigation approach (if necessary).

The field investigation will include the following components:

- Obtain access to the former Siemens building;
- Complete a pre-sampling questionnaire and conduct real-time low concentration (i.e., parts-per-billion by volume [ppbv]) photoionization detector (PID) monitoring capable of detecting total volatile organic compounds (VOCs) at concentrations less than 10 ppbv during a pre-sampling site inspection;
- Identify air quality sample locations and document these locations in a brief letter to the RWQCB and USEPA;
- Collect representative air quality samples;
- Analyze air samples at an off-site laboratory; and
- Evaluate the results and prepare a report.

Indoor air and outdoor (ambient) air samples will be collected and analyzed for chemicals of concern (COCs) and chloroform (Table 1) using USEPA Test Method TO-15 for selective ion monitoring (SIM) to achieve low-level reporting limits.

Study Area—Former Siemens Building

The former Siemens building is a currently occupied commercial office building, located just southeast of the intersection of Homestead Road and Tantau Avenue (Figure 2). The current tenant of the site is Kaiser Permanente, who operates a behavior health center in the building.

Analyses

The COCs for this investigation are the same as those for the 2012 Work Plan (chemical specified with remediation goals in the Cleanup and Abatement Order 90-119) and any additional VOCs detected in grab groundwater sampling collected from A1 depth interval in the Off-Site Study Area. In addition, samples will be analyzed for chloroform at the request of USEPA to evaluate whether chemicals in indoor air may be present in air unrelated to subsurface sources.

Data Quality Objectives

The data quality objectives of this investigation are the same as those described in the 2012 Work Plan for indoor air sampling.

Data Evaluation

The analytical results of indoor air samples will be evaluated by three tiers of screening levels (Table 1):

- Tier 1 – Comparison to background/outdoor air collected concurrently with indoor air samples;
- Tier 2 – Short-term health-based criteria including Minimum Risk Levels (MRLs) (ASTDR, 2013[4]) or Interim Short-term Response Action Levels for TCE (USEPA, 2013b[5]); and
- Tier 3 - Long-term human health-based screening criteria including USEPA's Regional Screening Levels (RSLs; see below) (USEPA, 2013a[6]) or California-modified indoor air screening levels for tetrachloroethene (USEPA, 2013b).

Table 1 lists the COCs and their respective RSL and MRL screening criteria for indoor/outdoor air sample data. Table 1 also lists the laboratory reporting limits for each COC using low-level (SIM) TO-15 analysis. As shown on Table 1, the laboratory reporting limits are lower than regulatory screening levels.

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[4] Agency for Toxic Substances & Disease Registry (ATSDR). 2013. *Minimum Risk Levels (MRLs) for Hazardous Substances*. July.

[5] USEPA. 2013b. Memorandum *from Kathleen Salyer of USEPA to Stephen Hill, Chief, Toxic Cleanup Division, California Regional Water Quality Control Board*. 3 December.

[6] USEPA. 2013a. Regional *Screening Levels for Chemical Contaminants at Superfund Sites*. November.

FIELD SAMPLING PLAN

This section presents the methodologies for completing field sampling activities to evaluate indoor air quality at the former Siemens building. Field sampling activities will be implemented by personnel from ERM accompanied by representatives of USEPA and/or the RWQCB. The RWQCB and USEPA will be provided 2-week notice prior to commencement of field activities. Table 2 presents a tentative field schedule for the implementation of the field program.

Sampling Locations

Three indoor air samples and one outdoor air sample will be collected at the former Siemens building. The sample locations will be determined by ERM and USEPA and/or RWQCB field staff during a site walkthrough. These locations will be documented in a brief letter to the RWQCB and USEPA prior to sampling.

Indoor Air Samples

Up to three sample locations on the first floor of the building will be identified by ERM and USEPA and/or RWQCB field staff. Sample locations will be based on identification of preferential pathways (including by conducting low concentration PID monitoring) and areas of regular worker exposure (e.g., office areas). At each sample location, an indoor air sample will be collected at 3 to 5 feet above ground surface. Samples will be collected over a time period to be determined (approximately 8 to 12 hours, depending on the hours the building is occupied each day and the work schedule for the tenants), and analyzed for the COCs and chloroform.

Outdoor Air Samples

On the same day that indoor samples are collected, one outdoor air sample will be collected and analyzed for the COCs and chloroform. Outdoor air sample collection will begin prior to the start of collection of the first indoor air sample. Outdoor air samples will be located near the air intake of the ventilation system for the former Siemens building, and away from any features, such as buildings, trees, or walls that may act as a wind shield and prevent the collection of a sample of outdoor air that is representative of the general area. If necessary, sampling equipment will be locked to a fixed object (not a building, tree, or wall) to deter theft or vandalism.

Field Methods and Procedures

Field methods for this sampling event will be the same as those specified in the 2012 Work Plan, with exceptions noted in the following sections.

Pre-Field Activities

Prior to conducting sampling at the former Siemens building, permission for access will be obtained from the owner and tenant. ERM will lead the effort to initially contact the building owner and tenant at the former Siemens Building, including negotiating building access and developing an access agreement. ERM will request RWQCB and/or USEPA's involvement if there are difficulties in obtaining access. A copy of the recent site fact sheet (May 2012) may be provided to the building owner/tenant.

Pre-Sampling Questionnaire

A Building Survey Form (Attachment 1) specific to commercial/ industrial buildings will be used to document chemical use and other relevant information about the building during the walkthrough.

Observations of building exteriors and interiors, including factors related to chemical storage, presence of floor drains, and elevators; conditions of the concrete slab (e.g., utility conduits or cracks); and presence of HVAC units will be evaluated. ERM will request information from the tenant regarding the operational parameters of the HVAC units, the building foundation, building plans, if available, as well as activities of various types of workers in the building to better understand potential exposure. Sample forms for building surveys and inventories of products that could potentially contain VOCs are included in Attachment 1.

The tenant will be advised not to perform any activities that could impact the results of the sensitive indoor air sampling (e.g., indoor painting, solvent use). Staff at the facility will be asked to refrain from garment handling operations (i.e., avoid bringing dry-cleaned garments into the building), smoking, building maintenance, or cleaning inside the facility during the 48-hour period prior to or during implementation of the sampling program. Additionally, the tenant will be asked to turn off the building's HVAC system and close the outdoor

air intakes (no outdoor makeup air) prior to and during sampling to assess the potential for vapor intrusion into the building.

Field Sampling Equipment

The flow controllers for indoor samples (i.e., 6-liter Summa™ canisters) will be set to the appropriate rate for the time period during which the samples will be collected (e.g., 8, 10, or 12 hours). For outdoor air samples, the flow controllers will be set to the appropriate rate for a similar period to the indoor air samples.

Field Sampling Procedures

Indoor air sampling procedures will be as described in the 2012 Work Plan.

Sample Identification

Samples will be identified using the format SMI-(IA/SS/OA)##-YYYYMMDD, where:

- IA and OA represents indoor air or outdoor air, respectively;
- ## represents the sample number consecutively numbered starting with 01; and
- YYYYMMDD represents the four digit year (YYYY), two-digit month (MM), and two-digit day (DD) the sample is collected.

Sample Analyses

Samples will be analyzed as specified in the 2012 Work Plan.

Sample Documentation

Sample documentation will be as described in the 2012 Work Plan, with the exception that a different indoor air sampling form will be used (Attachment 2), and that a sample correlation log will not be necessary for the single commercial/industrial building.

DATA EVALUATION

Data evaluation will be performed as presented in the 2012 Work Plan using criteria presented on Table 1 for commercial/industrial workers.

CLOSING

If you have any questions regarding this letter, please do not hesitate to contact us.

Sincerely,

Heather Balfour, P.E.
Project Manager

Benjamin Leslie-Bole
Partner-in-Charge

HDB/BLB/ks/dao/0201040.01SGB
enclosures:

Figure 1 – Site Location Map
Figure 2 – Indoor Air Study Area
Table 1 – Screening Criteria for Comparison of Indoor Air Results
Table 2 – Proposed Field Schedule
Attachment 1—Sample Forms for Building Surveys and Inventories of Products
Attachment 2—Indoor Air Sampling Form—Summa Canisters

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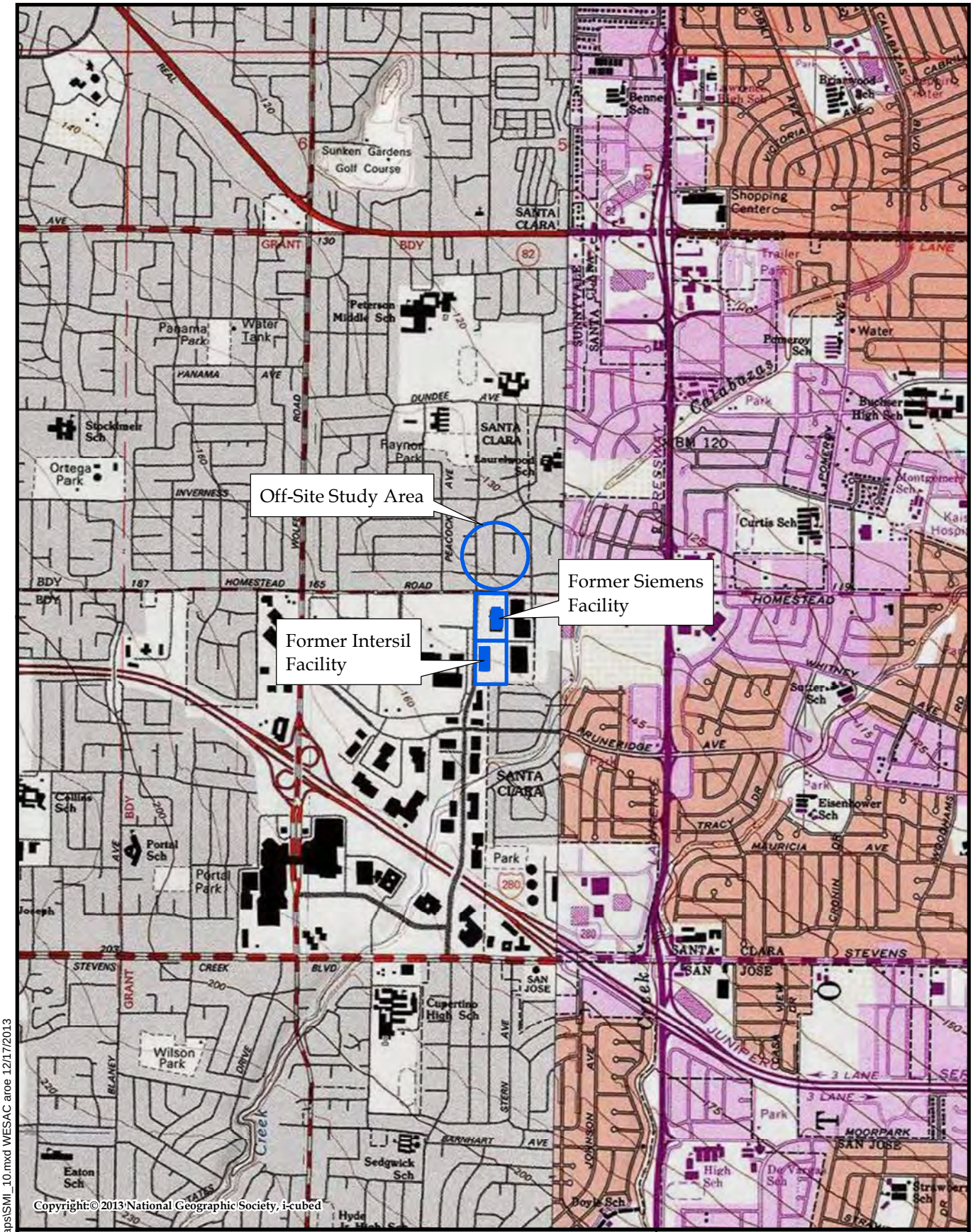
Figures



N

0 1000 2000

Scale in Feet

ERM

FIGURE 1
SITE LOCATION MAP
FORMER SIEMENS AND INTERSIL FACILITIES, AND OFF-SITE STUDY AREA
CUPERTINO, CALIFORNIA

PREPARED BY: aroe (ERM)	JOB NO. 01201040 FILE: SMI_10

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F:\GIS\Projects\SMI\ArcMaps\FIG_2_Indoor-Air_Study-Area.mxd WESAC 12/30/2013

s Ct
Quail Ave
Redwing Ave
Sparrow Ct
Swallow Dr
Lorne Way
Residential Buildings
Homestead Rd
Commercial Buildings
Commercial Buildings
Tantau Ave
KAISER PERMANENTE BUILDING (FORMER SIEMENS BUILDING)
IBM (FORMER AMI BUILDING 700-800)
IBM (FORMER AMI) PARKING STRUCTURE
Swallow Dr
Forge Dr

Legend

- Building Outlines
- City Block
- Indoor Air Study Area

N

0 50 100

Scale in Feet

Intersil/Siemens Site
Cupertino, California

FIGURE 2

INDOOR AIR STUDY AREA

ERM

PREPARED BY: MKJ

JOB NO. 0201040.01SGB
FILE: FIG_2_Indoor-Air_Study-Area

Tables

Table 1
Screening Criteria for Comparison of Indoor Air Results
Intersil/Siemens Site, Indoor Air Study Area
Cupertino, California

Screening Level	Chemical of Concern	Chloro-form	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	1,1,1-TCA	TCE	Toluene	PCE	Vinyl Chloride
Indoor Air and outdoor air laboratory reporting limit (Summa Canisters using USEPA Method TO-15 SIM) [1]		0.49	0.081	0.040	0.079	0.04	0.77	0.11	0.11	0.075	0.14	0.026
Tier 1—Comparison to Background/Outdoor Ambient Air												
Background (outdoor ambient air)		To be determined based on outdoor ambient air results										
Tier 2—Comparison of Short-Term Health Based Screening Criteria												
Acute Inhalation MRL [2]		NA	NP	NP	790 [3]	790	NP	11,000	--	3,800	1,400	1,300
Intermediate Inhalation MRL [4]		NA	NP	79	790 [3]	790	NP	3,800	--	NP	NP	77
Interim Short-term Response Action Level [5]		--	--	--	--	--	--	--	7.0	--	--	--
Tier 3—Comparison to Long-Term Health Based Screening Criteria												
Commercial/Industrial Screening Level – Indoor Air [6]		NA	7.7	880	260 [3]	260	130,000	22,000	3.0	22,000	2 [7]	2.8

Notes:

All concentrations are presented in micrograms per cubic meter ($\mu g/m^3$).

1. Analytical laboratory reporting limits were provided by Eurofins Air Toxics, Inc., of Folsom, California. Reporting limits cited do not take into account sample dilution (approximate factor of 1.6) due to canister pressurization.
2. MRLs for acute exposures (i.e., exposure durations of 1 to 14 days) for the inhalation pathway (ATSDR, 2011).
3. Value published for trans-1,2-DCE is used as a surrogate for cis-1,2-DCE.
4. MRLs for intermediate exposures (i.e., exposure durations of >14 to 365 days) for the inhalation pathway (ATSDR, 2011).
5. Interim Short-term Response Action Level specified by United States Environmental Protection Agency (EPA) Region 9 (EPA, 2013b). Value is based on a 10-hour workday and a hazard index of 1. Exceedance of this concentration levels triggers mitigation; exceedance of three times this concentration triggers an immediate response.
6. Regional Screening Levels (RSLs) for industrial air (EPA, 2013a). Lower of cancer or noncancer values presented.
7. The current RSL for PCE of 47 $\mu g/m^3$ reflects recent updates to PCE's toxicity criteria by EPA. However, California has not yet adopted these revised criteria. Therefore, the screening level for PCE is based on California toxicity criterion and EPA's methods for estimating exposure.

Abbreviations

1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane
MRL = Minimal Risk Level
NA = Not applicable; chloroform is measured as an indicator of the connection between indoor air and sub-slab air and is not considered a chemical of concern for indoor air at this site.
NP = Not published
TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethene

References

Agency for Toxic Substances & Disease Registry (ATSDR), 2013, Minimal Risk Levels (MRLs) for Hazardous Substances, July. http://www.atsdr.cdc.gov/mrls/mrllist.asp

U.S. Environmental Protection Agency (EPA), Regions 3, 6, and 9, 2013a, Regional Screening Levels for Chemical Contaminants at Superfund Sites, November. http://www.epa.gov/region9/superfund/prg.

U.S. Environmental Protection Agency (EPA), 2013b, Memorandum from Kathleen Salyer of the EPA to Stephen Hill, Chief, Toxic Cleanup Division, California Regional Quality Control Board, December 3.

Table 2
Proposed Field Schedule
Intersil/Siemens Site, Indoor Air Study Area
Cupertino, California

Task	Week 1	Week 2	Week 3	Week 4
Request access to former Siemens building	Following submittal of the Third Addendum, SMI will provide a copy to the building owner and building occupant to provide access. SMI will obtain access agreements.	If necessary, SMI will continue initial contact with building owner and/or occupant. USEPA may provide assistance if necessary. Following completed access agreement, SMI and USEPA to schedule a site walkthrough with occupant.	If necessary, SMI will continue initial contact with building owner and/or occupant.	
Conduct presample inspection (questionnaire and low concentration monitoring)			Conduct site walk through, including chemical inventory and selection of sample locations. Prepare brief letter documenting proposed sample locations.	
Collect sub-slab vapor samples				Conduct sub-slab sampling program within the former Siemens building.
Collect indoor air and outdoor ambient air samples				Conduct indoor and outdoor air sampling program within the former Siemens building.

Notes:
SMI - SMI Holding LLC
USEPA - United States Environmental Protection Agency

Attachment 1
Sample Forms for Building Surveys and Inventories of Products

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

HVAC Checklist - Short Form

Building Name: _____ Address: _____

Completed by: _____ Date: _____ File Number: _____

Sections 2, 4 and 6 and Appendix B discuss the relationships between the HVAC system and indoor air quality.

MECHANICAL ROOM

- Clean and dry? _____ Stored refuse or chemicals? _____
- Describe items in need of attention _____

MAJOR MECHANICAL EQUIPMENT

- Preventive maintenance (PM) plan in use? _____

Control System

- Type _____
- System operation _____
- Date of last calibration _____

Boilers

- Rated Btu input _____ Condition _____
- Combustion air: is there at least one square inch free area per 2,000 Btu input? _____
- Fuel or combustion odors _____

Cooling Tower

- Clean? no leaks or overflow? _____ Slime or algae growth? _____
- Eliminator performance _____
- Biocide treatment working? (list type of biocide) _____
- Spill containment plan implemented? _____ Dirt separator working? _____

Chillers

- Refrigerant leaks? _____
- Evidence of condensation problems? _____
- Waste oil and refrigerant properly stored and disposed of? _____

HVAC Checklist - Short Form

Building Name: _____ Address: _____

Completed by: _____ Date: _____ File Number: _____

AIR HANDLING UNIT

■ Unit identification _____ Area served _____

Outdoor Air Intake, Mixing Plenum, and Damper

■ Outdoor air intake location _____

■ Nearby contaminant sources? (describe) _____

■ Bird screen in place and unobstructed? _____

■ Design total cfm _____ outdoor air (O.A.) cfm _____ date last tested and balanced _____

■ Minimum % O.A. (damper setting) _____ Minimum cfm O.A. $\frac{\text{(total cfm x minimum \% O.A.)}}{100}$ = _____

■ Current O.A. damper setting (date, time, and HVAC operating mode) _____

■ Damper control sequence (describe) _____

■ Condition of dampers and controls (note date) _____

Fans

■ Control sequence _____

■ Condition (note date) _____

■ Indicated temperatures supply air _____ mixed air _____ return air _____ outdoor air _____

■ Actual temperatures supply air _____ mixed air _____ return air _____ outdoor air _____

Coils

■ Heating fluid discharge temperature _____ ΔT _____ cooling fluid discharge temperature _____ ΔT _____

■ Controls (describe) _____

■ Condition (note date) _____

Humidifier

■ Type _____ if biocide is used, note type _____

■ Condition (no overflow, drains trapped, all nozzles working?) _____

■ No slime, visible growth, or mineral deposits? _____

HVAC Checklist - Short Form

Building Name: _____ Address: _____

Completed by: _____ Date: _____ File Number: _____

DISTRIBUTION SYSTEM

Zone/ Room	System Type	Supply Air		Return Air		Power Exhaust		
		ducted/ unducted	cfm*	ducted/ unducted	cfm*	cfm*	control	serves (e.g. toilet)

Condition of distribution system and terminal equipment (note locations of problems)

- Adequate access for maintenance? _____
- Ducts and coils clean and obstructed? _____
- Air paths unobstructed? supply _____ return _____ transfer _____ exhaust _____ make-up _____
- Note locations of blocked air paths, diffusers, or grilles _____
- Any unintentional openings into plenums? _____
- Controls operating properly? _____
- Air volume correct? _____
- Drain pans clean? Any visible growth or odors? _____

Filters

Location	Type/Rating	Size	Date Last Changed	Condition (give date)

HVAC Checklist - Short Form

Building Name: _____ Address: _____

Completed by: _____ Date: _____ File Number: _____

OCCUPIED SPACE

Thermostat types _____

Zone/ Room	Thermostat Location	What Does Thermostat Control? (e.g., radiator, AHU-3)	Setpoints		Measured Temperature	Day/ Time
			Summer	Winter		

Humidistats/Dehumidistats type _____

Zone/ Room	Humidistat/ Dehumidistat Location	What Does It Control?	Setpoints (%RH)	Measured Temperature	Day/ Time

■ Potential problems (note location) _____

■ Thermal comfort or air circulation (drafts, obstructed airflow, stagnant air, overcrowding, poor thermostat location)

_____

_____

■ Malfunctioning equipment _____

■ Major sources of odors or contaminants (e.g., poor sanitation, incompatible uses of space)

_____

Attachment 2
Indoor Air Sampling Form –
Summa Canisters

INDOOR AIR SAMPLING FORM—SUMMA CANISTERS

Project and Task No.: _____ **Sampled by:** _____

Project Name: _____ **Date**: _____

Project Address: _____ **Weather**: _____

Sample ID	Date	Sample Type (indoor or ambient)	Summa Canister ID	Flow Controller ID	Analysis	Start Sampling		End Sampling	
						Time	Canister Vacuum	Time	Canister Vacuum

Tubing volume/linear foot (in cc) calculated by: $95.76 \times [\text{tubing diameter (in cm)}/2]^2$